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Traumatic Spinal Cord Injuries in Texas

In Texas since 1994, physicians and hospitals have been required by law to report traumatic spinal cord injuries to the Texas Department of Health (TDH). Physicians and hospitals may meet their reporting requirements by either sending a paper report or transmitting data electronically to the TDH Trauma Registry. Information collected includes items such as demographic data, etiology, intentionality, level and extent of injury, use of restraints or helmets, and discharge status.

Traumatic spinal cord injury (SCI) is defined as an acute, traumatic lesion of the neural elements in the spinal cord, resulting in temporary or permanent sensory deficit, motor deficit, or bladder/bowel dysfunction. These injuries are particularly devastating due to the permanent nature of such injuries, the relatively young age of most victims, and the high costs of acute and long term care.

In 1999, the most recent year for which data is available, 633 cases of SCI were identified in Texas; 27 of these cases were among non-Texas residents. Data was obtained from surveillance reports and death certificates.

Three times as many males (477) as females (156) sustained an SCI in Texas. The racial/ethnic distribution of SCI cases in Texas was 60% White, 23% Hispanic, 13% African American, and 3% other. These data are similar to national data except that nationally the male/female ratio is 4 to 1, and the Hispanic percentage is lower than is found in Texas (8%). The condition upon hospital discharge in Texas was 19% good (returning to previous level of function), 17% moderate disability (self-care), 20% severe disability (dependent), 3% vegetative (no higher mental function), 18% dead, and 24% unknown.

The age of persons sustaining an SCI ranged from 8 months to 93 years. Persons 15 to 19 years of age had the highest number of SCIs (84) (Figure 1). The mean age of SCI cases was 37 years. The majority (63%) of SCIs occurred among persons aged 15 to 44 years.

Of SCIs occurring in 1999, 92% were unintentional and 8% were intentional (ie, self-inflicted or assault). As shown in Figure 2, the most frequent cause was motor vehicle-related (traffic and nontraffic) incidents (53%), followed by falls (20%). The majority of the intentional injuries, 42 of 49 (86%), were assaults. Firearms were used in 30 (61%) of the intentional SCIs (26 assaults and 4 self-inflicted).

Figure 1. Spinal Cord Injuries by Age Group

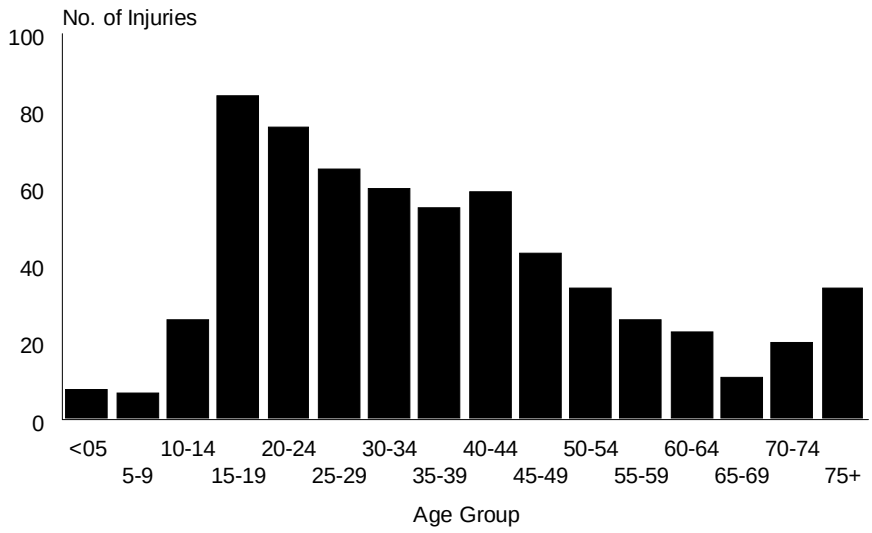

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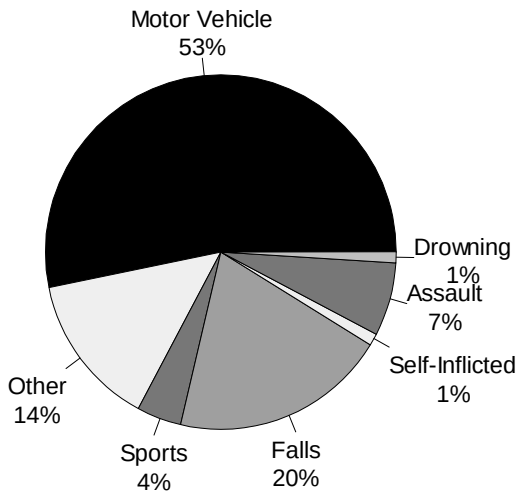
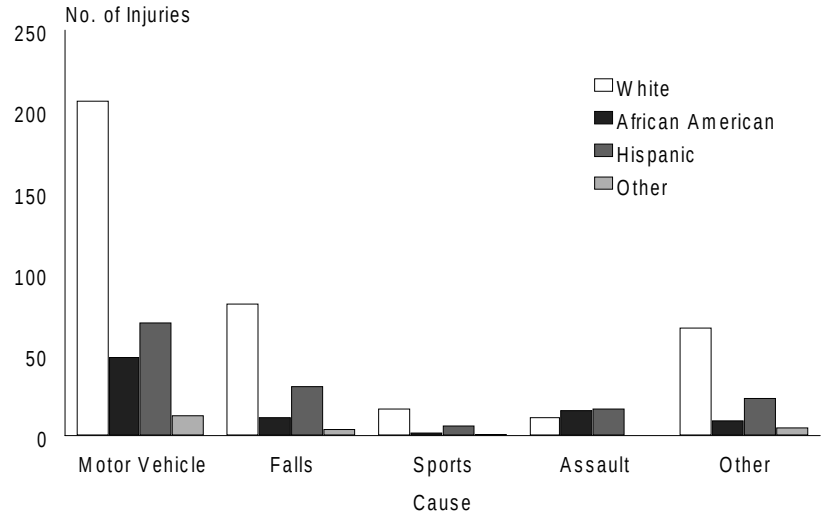
Figure 2. Spinal Cord Injuries by Etiology



Of the 336 motor-vehicle related SCIs, 235 occurred to persons 15 to 49 years of age. Persons aged 20 to 24 had the highest percentage (13%) of motor vehicle-related SCIs, followed by those aged 15 to 19 (12%). Persons aged 65 years and older accounted for 25% of all SCIs caused by falls. A majority (15) of the 26 sports-related SCIs were among persons under the age of 20.

Motor-vehicle related (MV) incidents were the leading cause of SCIs for all racial/ethnic groups (Figure 3). The second leading cause of SCIs for all racial/ethnic groups except Blacks was falls; the second leading cause of SCIs for Blacks was assaults. For all causes except assaults, Whites had the highest number of SCIs; Hispanics experienced a higher number of SCIs from assault (16) than the other race/ethnicities (Blacks had 15 and Whites, 11).

Figure 3. Spinal Cord Injuries by Cause and Race/Ethnicity



Motor vehicle cases in which the patient was a motor vehicle occupant (driver or passenger) excluding motorcycles accounted for 269 (80%) of all motor-vehicle-related injuries. Information regarding the use of protective devices in these motor vehicle occupant SCIs was available for 192 cases. Among these cases, 53% of patients did not use a seat belt and/or air bag at the time of the incident. There were 20 incidents involving motorcyclists and 2 involving bicyclists. Thirteen (65%) of the motor-cyclists and the 2 (100%) of the bicyclists were not wearing a helmet at the time of the incident.

There were 41 SCIs to children younger than 15. Twenty-six of these injuries occurred to children aged 10 to 14. Among the total SCIs to children less than 15 years of age, 22 were by motor vehicle, 5 were due to falls, 6 were sports-related injuries, 1 was an assault-related injury, and 7 were by other causes. Twenty-two were known to have used a protective device; 11 had not.

Among the 253 (40%) of the 633 patients who were tested for blood alcohol level, (99) 44% were found to have alcohol in their system: 86% of these were male. Seventeen percent who had consumed alcohol were under the legal drinking age of 21 years of age. Among the alcohol-related SCI cases, 71 were MV-related incidents, 14 were falls, 4 were assaults, and 3 were sports-related. Four of the alcohol-related injuries involved firearms. Among the MV-related incidents with known alcohol results, 46% of the patients had consumed alcohol prior to the injury.

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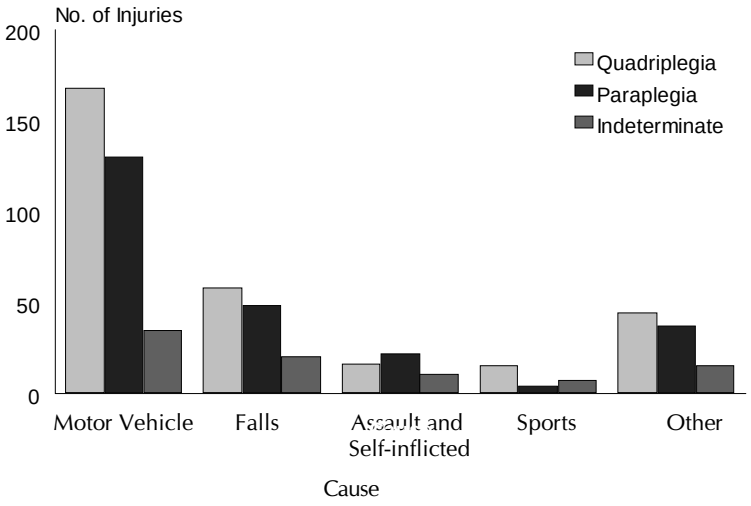
Information concerning job-related injuries was available for 521 cases. Thirty-four (5%) of these cases were job related: 9 were MV related, 21 resulted from a fall, 2 involved being struck by an object, 1 related to machinery use, and the cause of 1 was unknown. Ten of the persons with work-related SCI were tested for alcohol, and 3 of these had used alcohol prior to their injury.

Figure 4 shows the injury level and the extent of neurological impairment of SCI patients. The severity of the SCI refers to both the level of the injury (ie, the injured segment of the spinal cord) and the amount of neurological impairment below the level of the injury. Forty-eight percent of injuries resulted in quadriplegia (ie, injury to the cervical segments of the spinal cord), 38% in paraplegia (injury in the thoracic, lumbar, or sacral segments of the spinal cord), and 14% in injury of indeterminate segments. The extent of the injury is related to cause. Motor vehicle, falls, and sports-related incidents resulted in more cases of quadriplegia than of paraplegia. However, assaults and self-inflicted injuries resulted in more cases of paraplegia than of quadriplegia.

Acute care hospital stay information was available for 51% (323) of all Texas SCI cases. The average acute care hospital stay for a SCI patient, exclusive of rehabilitation hospital stays, was 15 days. Trauma Registry information regarding acute care cost was available for 58% (370) of all SCI cases. The average cost per patient for a traumatic SCI was over $63,000 in acute care costs, an amount that does not include rehabilitation hospital costs nor physician fees. The total amount for those 370 SCI cases with known costs totaled $22.9 million. If this average cost is applied to all SCI patients, the total acute care cost of SCI in Texas would be estimated at

Figure 4. Level of Injury by Cause



$40 million. Per-person economic costs associated with traumatic spinal cord injuries are among the highest costs for injury-caused pathologies and impairments.[1] First year costs for a SCI including all hospitalization, equipment procurement, and home modifications average more than $220,000 per person.[2]

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2. Berkowitz M., O'Leary PK., Kruse DL., Harvey C. Basic Demographics, Injury Characteristics, and Etiology of Spinal Cord Injury in Spinal Cord Injury: An Analysis of Medical and Social Costs. New York: Demos Medical Publishing Inc, 1998.

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Disease Prevention News Print Services to be Discontinued

Recent substantial funding cuts throughout the Texas Department of Health (TDH) as well as increased printing and mailing costs have required TDH to discontinue the print version of *Disease Prevention News* at the end of the present renewal period: December 31, 2002. Starting with the first issue of 2003, only the electronic (PDF) version of *DPN* will be available.

DPN was made available online in 1995 to reduce production costs and to shorten the time required to get pubic health information, which often is highly time-sensitive, to the readers. The primary justification for continuing to provide print services has been that some members of the target audience, primarily some local health departments and regional suboffices, lacked Internet access. Because the newly established Health Alert Network now provides Internet access to most if not all of these offices and because income from fees for *DPN* print services covers only a small fraction of the printing, handling, and mailing costs—it is difficult to justify continuing these services during the current TDH budget shortfall.

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